# CAD - COMPUTER-AIDED DESIGN

**CAD 105** **4 credit hours (lecture: 3 | lab: 2)**
**Industrial Design Engineering**
Course introduces industrial design, and its place in the manufacturing process. Content includes design visualization, creation, and application of 3-D computer-generated models in today's manufacturing, communication, and publishing industries; creating a 3-D computer model component design from original idea, pencil sketching, and concept analysis, to use of surface and solid modeling software; use of Boolean operations in model construction and editing, display commands, detailing, geometric translation, rendering and presentation.
*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 107** **2 credit hours (lecture: 2 | lab: 1)**
**Introduction to 3D Printing**
This course is an introduction to 3D printing with emphasis on operation of 3D printers and design of 3D printed parts. The computer will be used by students to create 3 dimensional models and prepare the models to print using plastic modeling material. Course content covers step by step approach to creating models and setting up a 3D printer.
**Prerequisite:** None.
*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 116** **3 credit hours (lecture: 2 | lab: 2)**
**Basic AutoCAD**
Course is first of three in drafting and design using AutoCAD software. Content includes setting up a drawing electronically; drawing and editing; construction techniques; display commands; effective layering; dimensioning and detailing; using blocks, and plotting.
*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 117** **4 credit hours (lecture: 4 | lab: 0)**
**Intermediate AutoCAD**
Course is second of three in AutoCAD. Content includes assigning attributes to blocks; using external references; grouping and filtering entities, and slide shows; three-dimensional (3D) topics cover dynamic viewing, defining coordinate systems, extrusions, wireframe modeling, surface modeling; introduction in to solid modeling.
**Recommended:** CAD 116 or consent of instructor.
*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 118** **4 credit hours (lecture: 4 | lab: 0)**
**Advanced AutoCAD**
The last course in the core AutoCAD sequence follows up on solid modeling topics, including an introduction to parametric design and rendering. The focus of the course is productively customizing AutoCAD, including customization of menus, toolbars, and digitizers. The Auto LISP programming language is also introduced.
**Recommended:** CAD 117 or consent of instructor.
*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 134** **4 credit hours (lecture: 3 | lab: 2)**
**Basic AutoCAD for Interior Design**
Course introduces Computer-Aided Design with emphasis on interior design applications. Students use the computer to draw and plot floor plans, lighting and electrical plans, and elevations. The course covers setting up a drawing electronically, drawing and editing, construction techniques, display commands, effective layering, dimensioning and detailing, using blocks, and plotting.
*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 136** **4 credit hours (lecture: 3 | lab: 2)**
**Advanced AutoCAD for Interior Design**
Second course in AutoCAD for interior design covers creating and utilizing advanced drawing techniques; developing complex interior design applications including lighting, electrical plans, elevations, and 3D drawings; producing drawings with unconventional angles; using symbols/blocks and assigning attributes for use in drawing applications; and producing drawing plots with multiple scales with advanced functionality.
**Recommended:** CAD 134.
*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 191** **4 credit hours (lecture: 3 | lab: 2)**
**Emergency Response Pre-Plan Design**
A course for emergency responders using computer- based software. Course introduces emergency response applications with emphasis on emergency pre-planning. It focuses on designing plans for use by emergency responders using Firehouse, AutoCAD, and other applicable software. The computer will be used by students to document information about the condition of assets, including buildings and personnel for transmission to emergency operations managers and personnel who need it for planning response, crisis management, and recovery efforts. Credit cannot be received in both CAD 191 and FIR 191.
*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 210** **4 credit hours (lecture: 3 | lab: 2)**
**Industrial Design Engineering Techniques**
Course teaches skills for creating prototypes of computer models using 3D modeling software. Hands-on lab course involves critical thinking skills related to industrial design and manufacturing. Content includes industrial techniques such as extrusions, laser cutting, fasteners, welding, sheet metal production, injection molding, 3D printing and production processes utilizing computer controlled machines and prototyping equipment.
**Recommended:** General computer skills
*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 220** **4 credit hours (lecture: 3 | lab: 2)**
**CAD Introduction to Building Systems - Revit**
Revit enables students to create full 3D architectural project models and place them in working drawings. Class focuses on the basic tools that the majority of users will need to work with. Topics include creating floor plans, adding views, adding various building components, and creating sheets for plotting. Credit cannot be received in both ARC 220 and CAD 220.
**Recommended:** Knowledge of CAD drafting.
*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 223** **3 credit hours (lecture: 3 | lab: 0)**
**Introduction To 3D Studio Max**
Course introduces 3D Studio MAX, the leading software in its field, preferred choice of animators, designers and engineers. Content includes capabilities of animation and rendering features as used in such diverse applications as engineering and architectural visualization, accident recreation and multimedia presentations.
*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 224** **4 credit hours (lecture: 3 | lab: 2)**
**Advanced Building Information Modeling - Revit**
This is the second course in BIM Technologies for Revit Architecture. Topics include site development, interoperability, linking and managing projects, advanced modeling methods, design options, phasing, work sharing and 2D and 3D presentation techniques.
**Recommended:** CAD 220 or consent of instructor
*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 228** **4 credit hours (lecture: 3 | lab: 2)**

**Revit MEP – Mecbiophanical, Electrical, Plumbing**

Course in BIM Technologies for Revit will focus on HVAC, Plumbing and Electrical Systems. Topics include working with linked architectural files, piping systems and fire protection systems, electrical components, circuits, cable tray and conduits, annotating construction documents and creating schedules.

**Recommended:** CAD 220 or consent of instructor.

*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 230** **4 credit hours (lecture: 3 | lab: 2)**

**Introduction to SolidWorks**

Course explores the theory and application of solid modeling techniques for product design and manufacturing, using SolidWorks parametric modeling software. Content includes transforming computer sketches into three-dimensional features; parametric modeling techniques further explored to create computer models of plastic molded parts; casting; and sheet metal; photorealistic rendering and animation of three dimensional models to visually communicate design ideas.

**Prerequisite:** General Computer Skill

*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 232** **4 credit hours (lecture: 3 | lab: 2)**

**Intermediate SolidWorks**

Course offers an intermediate exploration of the theory and application of SolidWorks design software. It builds up on skills learned in CAD-230 course to broaden students' modeling expertise and prepare them for the advanced features covered in CAD-231 course. Course content includes step by step approach to teach students new design skills by creating and editing solids, surfaces, sheet metal, multibody parts, assemblies, and detail drawings. Recommendation: CAD 230

*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 234** **4 credit hours (lecture: 3 | lab: 2)**

**Advanced SolidWorks**

This course is an advanced exploration of the theory and application of solid modeling techniques for product design and manufacturing using SolidWorks. Topics covered include photorealistic rendering of computer models, animation, and advanced computer modeling techniques. Design topics include molded parts, sheet metal, detail drawings, and assemblies.

**Prerequisite:** None: Recommended CAD 232 Intermediate Solidworks.

*Delivery mode: Face-to-Face | Hybrid | Online* Fee: $50

**CAD 240** **3 credit hours (lecture: 2 | lab: 2)**

**Introduction to Autodesk Inventor**

Course explores issues in the field of computeraided design using Autodesk Inventor. Content includes basic parametric modeling techniques using sketching tools; creating basic three-dimensional parts, assemblies, and 3-D presentations.

*Delivery mode: Face-to-Face | Online* Fee: $50

**CAD 290** **1-4 credit hours (lecture: 1-4 | lab: 1-4)**

**Topics in Computer-Aided Design**

Course explores major issues in the field of Computer-Aided Design. Topics will be selected from the following subspecialties as they relate to the design process: up-and-coming CAD software packages, animation, multimedia, Internet, and simulation. Course has different focus and/or scope from other courses currently offered in the department and can be repeated on different topics up to three times for up to nine semester hours of credit. Fee Varies. Prerequisite may vary by topic.

*Delivery mode: Face-to-Face | Online*